What is claimed is:

1. A process for producing low-k dielectric films on semiconductors or electrical circuits, which comprises using incompletely condensed polyhedral oligomeric silsesquioxanes of the formula

$$[(R_aX_bSiO_{1.5})_m(R_cY_dSiO)_n]$$

with:
a, b = 0-1; c, d = 1; m+n ≥ 3; a+b = 1; n, m ≥ 1,
R = hydrogen atom or alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkynyl, cycloalkynyl, aryl or heteroaryl group, in each case substituted or unsubstituted,
X = an oxy, hydroxyl, alkoxy, carboxyl, silyl, silyloxy, halogen, epoxy, ester, fluoroalkyl, isocyanate, acrylate, methacrylate, nitrile, amino or phosphine group or substituents of type **R** containing at least one such group of type **X**,
Y = hydroxyl, alkoxy or a substituent of type $O\text{-}SiZ_1Z_2Z_3$, where Z_1, Z_2 and Z_3 are fluoroalkyl, alkoxy, silyloxy, epoxy, ester, acrylate, methacrylate or a nitrile group or substituents of type **R** and are identical or different,
not only the substituents of type **R** being identical or different but also the substituents of type **X** and **Y** in each case being identical or different, and comprising at least one hydroxyl group as substituent of type **Y**, for producing the film.

2. The process as claimed in claim 1, wherein incompletely condensed polyhedral oligomeric silsesquioxanes of the formula

$$[(R_aSiO_{1.5})_m(R_cY_dSiO)_n]$$

with:
a, c, d = 1; m+n ≥ 3; n, m ≥ 1,

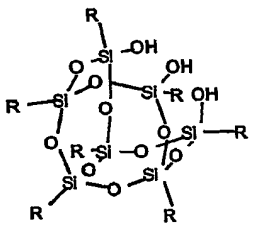
R = hydrogen atom or alkyl, cycloalkyl, alkenyl, cycloalkenyl, alkynyl, cycloalkynyl, aryl or heteroaryl group, in each case substituted or unsubstituted,

Y = hydroxyl, alkoxy or a substituent of type $O\text{-}SiZ_1Z_2Z_3$, where Z_1, Z_2 and Z_3 are fluoroalkyl, alkoxy, silyloxy, epoxy, ester, acrylate, methacrylate or a nitrile group or substituents of type **R** and are identical or different,

not only the substituents of type **R** being identical or different but also the substituents of type **Y** in each case being identical or different, and comprising at least one hydroxyl group as substituent of type **Y**, are used.

3. The process as claimed in claim 1 or 2, wherein incompletely condensed polyhedral oligomeric silsesquioxanes containing not more than three hydroxyl groups as type Y substituent are used.

4. The process as claimed in at least one of claims 1 to 3, wherein incompletely condensed polyhedral oligomeric silsesquioxanes of structure **1** or **2**



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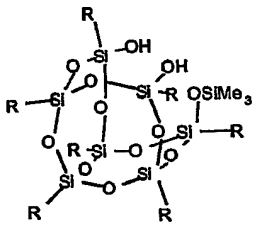

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are used.

5. The process as claimed in at least one of claims 1 to 4, wherein incompletely condensed polyhedral oligomeric silsesquioxanes are reacted with alkoxysilanes.

6. The process as claimed in claim 5, wherein incompletely condensed polyhedral oligomeric silsesquioxanes are reacted with tetraalkoxysilanes.

7. The process as claimed in at least one of claims 1 to 6, wherein the molar ratio of the incompletely condensed polyhedral oligomeric silsesquioxanes to the coreactant capable of hydrolytic condensation is from 1:10 to 10:1.

8. The process as claimed in claim 7, wherein the molar ratio of the incompletely condensed polyhedral oligomeric silsesquioxanes to the coreactant capable of hydrolytic condensation is 2:1.

9. The process as claimed in at least one of claims 1 to 8, wherein the low-k dielectric film is produced by means of a wet-chemical coating method.

10. The process as claimed in claim 9, wherein the low-k dielectric film is produced by spin coating and subsequent calcining.

11. A low-k dielectric film produced as claimed in at least one of claims 1 to 10.

12. The low-k dielectric film as claimed in claim 11, which has a k value of less than or equal to 2.3, measured at a frequency of 880 kHz.